

SECTION 5 – RECOMMENDATIONS

5.1 PRIMARY

In response to problems with residential foundations not unlike Amherst's, the Texas Section of the American Society of Civil Engineers (ASCE) published guidelines entitled, *Recommended Practice for the Design of Residential Foundations and Guidelines for the Evaluation and Repair of Residential Foundations* (Texas ASCE, 2002, 2002a). These guidelines, which are not standards, supplement building codes and provide guidance for residential foundation design, construction, and repair. We recommend that Amherst take this holistic approach and develop and adopt similar guidelines. Our primary recommendations are as follows:

1. The Town should develop and adopt new guidelines for the design and construction of residential foundations in Amherst to augment the *Residential Code of New York State* (NYSDOS, 2003). In general, the guidelines should facilitate construction of *engineered foundations* that are designed based on a *site-specific geotechnical engineering evaluation*. Using the findings of the geotechnical engineering evaluation, foundation *design should be performed by a licensed engineer*. The licensed engineer who designs the foundation should be considered the “*engineer of record*,” and should design the foundation to ensure *long-term performance*. Foundation *construction should be observed and documented* to ensure that the foundation is constructed in accordance with the provisions of the foundation design (Texas ASCE, 2002). Appendix 6.7 provides a working draft of the proposed guidelines for Amherst.
2. The Town should develop and adopt new guidelines for the assessment and repair of residential foundation damage in Amherst. In general, the guidelines should facilitate *engineered solutions* that are developed *based on a site-specific engineering evaluation*. Using the findings of the engineering evaluation, design of foundation repairs should be *performed by a licensed engineer*. The licensed engineer who designs the foundation repair should be considered the “*engineer of record*,” and should design the foundation repair to ensure *long-term performance*. Foundation *repair should be observed and documented* to ensure that the foundation repair is constructed in accordance with the provisions of the design. Appendix 6.8 provides a working draft of these guidelines for consideration by Amherst.
3. Homeowners (and homebuyers) north of Main Street should (a) review homeowners guides (Section 1.4), (b) review maps of foundation-related damages (this report or Building Department), (c) be familiar with the aforementioned proposed guidelines (Appendix 6.7 and 6.8), (d) perform bi-annual house inspections (Appendix 6.9), and, when appropriate, retain a licensed engineer to obtain a diagnosis and plan for remediation.

5.2 SECONDARY

Beyond the major recommendations to develop guidelines for design/construction and assessment/repairs, we suggest the Town consider the following secondary recommendations:

1. *Town of Amherst Soils Workshop* – the Town should sponsor a workshop/workgroup to promote dialogue, education, training, and the continued development of the design/construction and assessment/repairs guidelines.

2. *Homeowners' Website* – the Town should develop/sponsor a clearinghouse website dedicated to information exchange about foundation-related topics in Amherst. This site would be the warehouse of new information and allow “one-stop” shopping. Homeowner concern could be greatly reduced, if for example, homeowners with related problems/concerns could exchange information about engineers, contractors, cost estimates, remedial solutions, and alternative methods.

3. *Standardize Data* – the Town should standardize its terminology and methodology for data collection. The Town collects data (foundation inquiries, home inspections, foundation repair permits, plumbing inspections, utility repairs, etc.) that would be more useful if terminology and methodology were standardized and keyed to extent, scope, and causative factors.

4. *Homeowners/homebuyers Guide* – the Town should develop a homeowners/homebuyers guide specific to Amherst and the surrounding communities. The guide might be used in conjunction with a local ordinance that alerts homebuyers to the problems of buying and maintaining a house built on expansive/compressible soils.

5. *Knowledge-based Systems* – the Town should consider a knowledge-based system such as the Subsidence Case Management System (SCAMS), which is used by the UK to provide guidance for engineers dealing with subsidence cases at all stages – from initial diagnosis to remedial measures (Anumba and Scott, 2001).

6. *Repair evaluation* – the Town should consider evaluating the performance of foundation repair methods commonly used in Amherst.